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MEDICINE

How Medicine Brings the "Dead" to Life

By Marjorie MacDill

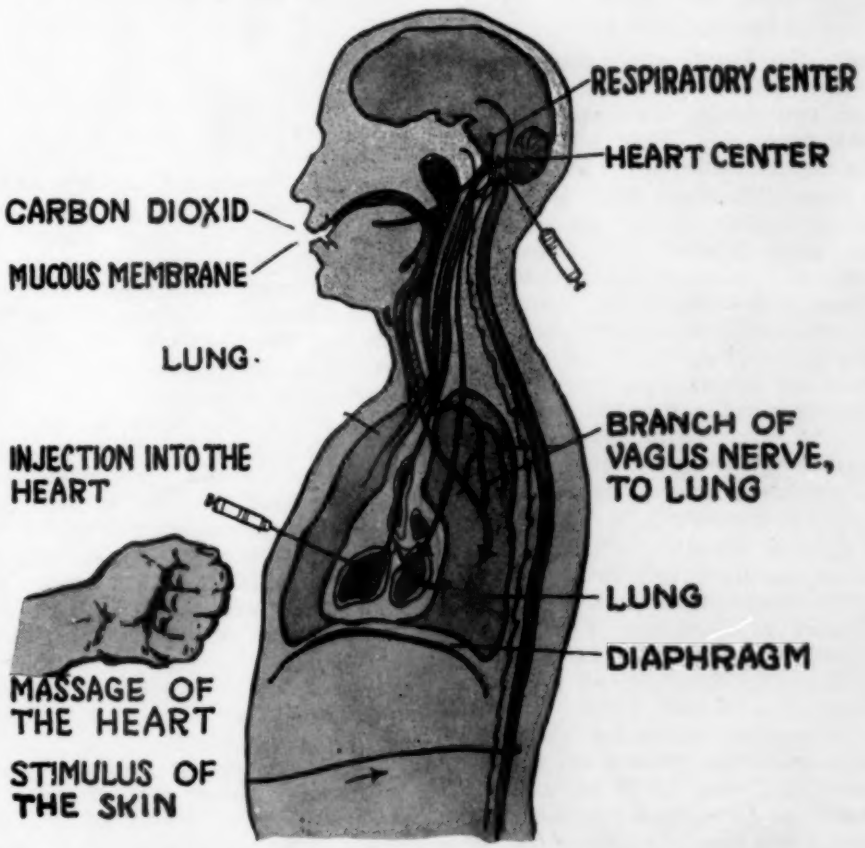
The beneficent grasp of modern science can now, in some cases, reach out and snatch back to life those who have stepped just over the border line of death.

Life in a physical frame exhausted and poisoned by long disease complicated by age can be maintained by the physician's skill and the care of the nurse for a long time.

Where the heart is suddenly overcome by some accidental shock or strain, or where the doctor must usher into a world a new life exhausted in the struggle to be born, there is a chance for rescue.

The star performer in modern medicine, when it comes to the case of a still-born baby or a heart giving out on the operating table, is adrenalin. This drug, when it first came into use several years ago, achieved great publicity for its supposed capacity to "bring the dead back to life." Actually it is a life saver rather than a life restorer. It can stimulate a heart suddenly overcome by some accidental shock or strain. It cannot renew a physical frame exhausted and poisoned by a long drawn-out disease. It is, however, one of the outstanding drugs of modern times and has brought about the survival of patients in many a spectacular case of heart stoppage.

The power of the suprarenal glands, of which adrenalin is the extract, to raise blood pressure by causing powerful contraction of the muscular walls of the blood vessels has been known for many years. The glands are small, two in number, situated just above the kidneys. Their active principle, causing stimulation of the muscles of the heart and blood vessels, was isolated in the period from 1901 to 1903 by several chemists, and is known to trade by the name of adrenalin, though scientists call it epinephrine.



HERE ARE THE CHIEF POINTS of attack in bringing an apparently dead body back to life

Adrenalin was tried out on wounded soldiers by German surgeons during the war without a great deal of success, but by 1919 there were several cases where patients survived several hours after the injection. In 1921 another German doctor reported the revival by means of adrenalin of a woman who had "collapsed" while being operated upon and was so far gone that even direct massage of the heart through the operation wound failed to start it going again.

Six minutes had elapsed when the drug was injected. Improvement in the heart sounds was noticed in ten seconds, breathing was soon resumed, and four weeks later the woman was discharged as cured.

In 1923, Dr. Carl Boden, attending physician at the American legation at Budapest, was called to treat a man 56 years old, apparently dying of a heart attack. While the doctor was applying the usual strong remedies the patient seemed to die, lying relaxed and with even his lips of a death-like pallor, and with his heart action and breathing apparently ended. The drug was immediately injected into the heart. In 45 sec-

(Just turn the page)

INDEX TO THIS ISSUE

American Indian, Story of 47
Ancients Had "New" Ideas 35
Animal Ecology 47
Archæology, Expedition Seeks Living 41
Architecture, Story of 47
Atoms Limit Accuracy 45

Blom, Frans 41
Buxton, L. H. Dudley 45

Cameron, H. C. 47
Castile Soap 47
Chemical Books, Selected List of 47
Child, The Nervous 47
Children, Healthy, Hear Best 39
Classics of Science 43
Coyote 47
Crafoord, Blarence 37
Crane and Patterson 47
"Dead" to Life, How Medicine Brings 33
De Sahagun, Bernadino 43
Dummer, Mrs. W. F. 47
Dunlap, Knight 35
Drury, Dana W. 39

Elton, Charles 47
Environment, Changing Our 45

Fallaize, E. N. 45
Freud, Sigmund 47

Garrod, Dorothy 45
Gilbert, William 43
Guiterman, Arthur 47

Healthy Children Hear Best 39
Hearing Best in Healthy Children 39

Indian, Story of the American 47
Insect Zoo in Paris 39
Island Again Above Water 35

Limitations of Method 35
"Living Archæology," Expedition Seeks 41

Magnetic Needle, Dip of 43
Magoffin, R. V. D. 35
Man the Animal 47
Medicine Brings "Dead" to Life 33
Mexican History, Find Lost 43
Mitchell, R. W. 47
Moulton, F. R. 45

Nature Ramblings 47
Neanderthal Skull, New 45
Nervous Child, The 47
Nuttal, Zelia 43

Personality, Psychology of 47
Psychology of Personality 47

Radin, Paul 47
Robbins, Samuel D. 37
Ruark, Arthur E. 45

Skjellerup Comet Not Old Visitor 41
Skull, New Neanderthal 45
Smallwood, William Martin 47
Smoke Effect on Sunlight 39
Soap, Castile 47
Stammering, Trace Cause of 37
Stroembaeck, J. P. 37
Sunlight Lost by Smoke 39
Symbolism—Its Meaning and Effect 47
Symbolism, Quotation from 35

Taboo, Totem and 47
Tallmadge, Thomas E. 47
Thompson, L. R. 37
Thomson, Andrew 35
Tomb Shows Barbaric Scene 39
Totem and Taboo 47

Unconscious, The 47
Ur Excavations Reveal Tomb with Barbaric Scene 39

Valentine, P. F. 47

Wiggers, C. J. 38
Wildwood Fables 47
Woolley, C. Leonard 39

Science News-Letter, Jan. 21, 1928

Bringing the "Dead" to Life

(*Continued from page 33*)

onds the heart was again audible to the stethoscope, breathing began, and two hours later consciousness was restored. Three months later the man seemed entirely well.

Since this time there have been many similar cases. Adrenalin is frequently injected into the heart in cases of circulatory failure that occur under anesthesia during operations. It can have little effect if there is no circulation, but there are authentic cases of hearts that have stopped beating a full minte that have been revived by adrenalin injection. It is interesting to note that artificial respiration is used many times as an auxiliary measure.

Several instances of still-born infants that have been brought to life by adrenalin are on record. Two doctors at Toulouse, France, who have had encouraging success in this field, put up the argument in a recent issue of a French medical journal, that injection in the heart should be employed more often when all other measures have failed to make the new-born baby breathe. They state that it is a comparatively simple procedure because the lungs of an infant who has not yet breathed are less likely to get in the way of the puncture of the needle.

If a baby does not breathe within ten or fifteen minutes after birth its chances of survival are small, so no time is lost in using adrenalin when the usual maneuvers, such as artificial respiration, rhythmic traction of the tongue, and good old-fashioned spanking have failed. The French doctors do not consider that adrenalin supplants the customary procedures to make a baby breathe at birth but they feel that it is a very useful supplement to these methods.

Several American babies who were apparently born dead have been restored to life by injections of adrenalin, according to the physicians who attended them. In 1923 a boy born to Mrs. Bertha Isaacson in a hospital in Brooklyn, N. Y., was revived when the lungs and heart refused to function at birth. The boy was the twin of a normal girl.

Another still-born infant was revived in a hospital in Spring Lake, N. J., the same year. He was born to Mr. and Mrs. James Miller, of Belmar, N. J., and was pronounced dead by the attending physician. After ten minutes of artificial respiration and other methods of resuscitation had failed, adrenalin was injected into the heart. Twice the heart action started, only to stop again. The third injection was successful and the heart was soon functioning normally.

Two years ago a baby girl born to Mr. and Mrs. C. W. Wright, of Hightstown, N. J., was revived after it had apparently been still-born.

These were among the first cases reported in this country, but not the only ones. The practice is coming into more general use as knowledge of adrenalin spreads.

Heart massage is another means of surgical rescue that comes into play when the beating of the patient's heart on the operating table fades out and ceases.

If the location of the operative field is such that the abdomen is actually opened up when it happens, the surgeon can reach up through the diaphragm and stimulate the contraction and expansion of the heart by periodic squeezing. Sometimes it works and the touch of skilful fingers is just enough to set the body's pump in action again. So another soul is saved from eternity.

A somewhat similar case recently occurred in Stockholm. Two patients, whose respiration had already ceased and who were virtually dead, have been recalled to life in the hospital of Moerby, through unique operations performed on the heart by two young Swedish surgeons, ac-

(*Turn to page 37*)

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GEOGRAPHY

Island Again Above Water

Falcon Island, in the Goro Sea southwest of Apia, and between the Fiji and Tongan Islands, is again above water after years of submergence. This is indicated by word received by Dr. Andrew Thomson, director of the Apia Observatory in Samoa. Heralded by a slight earthquake on September 30, great columns of smoke were observed from Nukualofa in the Tongan Islands issuing from the sea on October 4. Three days later the site was visited by the British warship Laburnum, and a new island was found about 300 feet high at its central point and three miles in circumference.

Puffs of smoke shot up about every 20 minutes to a height of from 4,000 to 5,000 feet, the tops of the smoke columns being lost in the clouds. With each outburst ashes and cinders were thrown into the air, to fall back and build up the central cone. Late in the fall the island was reported to be erupting steam at intervals of about once a minute along its entire length.

"The island was discovered in 1865 by the British cruiser H.M.S. Falcon, when it was a low-lying reef," says Dr. Thomson. "In 1885 an eruption took place, which built up a cone, which in 1889, after four years weathering, was found to be over 150 feet high. A slight volcanic outburst occurred in 1895. Since then the island, which was composed entirely of cinders and ashes, gradually slipped down into the sea.

"The area around the little South Sea Kingdom of Tonga is of great seismic activity. The earthquakes equal in intensity and frequency those of Japan. Some of the earthquakes are directly due to submarine volcanoes; others are caused by a readjustment of the earth's crust along a line of great ocean depths, which stretch from the Samoan Islands to New Zealand."

Science News-Letter, January 21, 1928

PHILOSOPHY

Limitations of Method

Quotation from SYMBOLISM: ITS MEANING AND EFFECT—Alfred North Whitehead—Macmillan.

The nineteenth century exaggerated the power of the historical method, and assumed as a matter of course that every character should be studied only in its embryonic stage. Thus, for example, "Love" has been studied among the savages and latterly among the morons.

Science News-Letter, January 21, 1928

PSYCHOLOGY

A Versatile Psychologist

KNIGHT DUNLAP

If you stepped into Dr. Dunlap's office you might find him at his desk putting the finishing touches to a paper to be presented at a traffic conference, setting forth some specific and practical ways of simplifying signs and signals to lessen the motorist's confusion. If you passed that way in the course of the next week and asked casually, "Well, how's traffic?" you would find that Dr. Dunlap was still very much interested in traffic problems, but just then he was working up pictures to go with an experiment, indicating that the mouth is the most expressive feature in the human face.

The next time you happened in, this professor would be reading proof sheets of an article on a new theory as to why men and women wear clothes. And so on, indefinitely. For Dr. Dunlap has a way of looking into any situation that catches his interest and seeing there some point to be explained or some missing fact to be drawn out by experiments. And once he has confronted himself with a problem, it has to be tackled.

This is all by way of saying that the head of the psychology department of Johns Hopkins University is both busy and versatile. This year Dr. Dunlap is on leave from the university to serve as chairman of the division of psychology and anthropology of the National Research Council.

In student days of degree collecting, Dr. Dunlap acquired a Ph. B. and M. L. at the University of California, in his native state, and then an A. M. and Ph. D. at Harvard.

Science News-Letter, January 21, 1928

ARCHÆOLOGY

Ancients Had "New" Ideas

By R. V. D. MAGOFFIN

Dr. Magoffin is president of the Archæological Institute of America.

As the ancient world gives up its dead it seems as though there is nothing new in the world.

A foreign firm of world famed makers of glass proclaimed some time ago the discovery of the method of making perfectly clear yellow-white glass; a few weeks later came the real discovery. In Egypt, a complete table set of clear yellow-white glass of 150 pieces comes unbroken from the excavation of an ancient city in the stratum that dates from the second century B. C. Behold, a glass idol shattered!

In clearing away the old wall on the Acropolis hill at Athens, which Themistocles about 500 years B. C. had to build very hurriedly using anything that came to hand, there were found in the debris two marble slabs with sculptured reliefs on them. One of them shows a fine fight between a dog and a cat. But the other portrays the start of a real struggle. In the center of the sculptured slab two young men stand, hockey sticks in hand, the ball on the ground between the sticks, and the referee about to give the signal for the game to begin.

Our boys whip tops at the regular top season. The boys in ancient times did not know that sport, we may be sure. So we thought, until a few years ago. In a museum in Baltimore there is now an ancient Greek dish that was painted and fired some 2500 years ago. In the center of its bowl a painted design shows two persons, a man and a boy, and some sort of object on the ground between them. The man holds a short stick, from which hang five little strips painted black. They represent leather. The object on the ground is a big wooden top. The man is whipping it, and it spins there as nicely as any top of the most modern make.

But of course the ancient Greek or Roman boy did not know the luxury of that greatest juvenile necessity, a pocket knife. Didn't he, though? There have come to many of our museums in the last few years from the recent excavations, scores of ancient pocket knives, a good many with the blades of bronze still in them. Bronze will cut as sharply as steel, but it must be honed or stropped more often. If, however, our knife blades are a bit better than those of two or three thousand years ago, the handles of bone and ivory on the ancient knives

(*Just turn the page*)

Ancients Had New Ideas

(*Continued from page 35*)

are beautiful, whereas ours are ugly. One handle of ivory is carved to represent the figure of an Atlas, another is like a marble table leg, another represents a full armed gladiator, another is like a fish, and so on for scores of different handles of beautiful shapes.

A half century ago a fortune was made by the invention of the safety pin. Some ancient person will rise from the dead one of these times and sue for accumulated royalties. The safety pin in bronze, in silver, and in gold, with pin, bow, catch, and all—except that all the thousand varieties are artistic in shape without losing safety value—are now by the hundreds in every good museum, and many of them go back in date a thousand years more B. C. than we are since.

But of course we beat those ancients in sewers. If digging them up and keeping them in public view is the criterion, we certainly do. The excavations of Sir Arthur Evans at Cnossus in Crete laid bare a sewage system of some 2500 years or so B. C. about as good as ours of today. The lead water pipes in Pompeii and Ostia are only 2000 years old. Yet in one of the houses in the Street of Abundance at Pompeii which was excavated only last summer, you can turn on the ancient faucet, just like ours, and the fountains will play for you from the same openings through which the water sprayed or shot two millenia ago.

It begins to look as if we do nothing that they also did not know how to do. They shot craps, they played checkers and parchesi, they had perfect form in leg action in the sprints and the distance races, they threw the discus, they used "knucks" instead of gloves in boxing, they wore clothes as short, as brilliantly colored, and as diaphanous as any that show off the dancer, the actress, or the debutante of today. Icarus had no harder luck than many an aviator of this day of grace; Tantalus was just as thirsty as any modern American. Many a winning charioteer drove as many races as any modern jockey ever rode and made as much money; the ancient gladiator had even more lady devotees than the modern prize fighter.

Was it Solomon who said there was nothing new under the sun? No wonder he is famous as a wise man.

Maryland has more automobiles than telephones.

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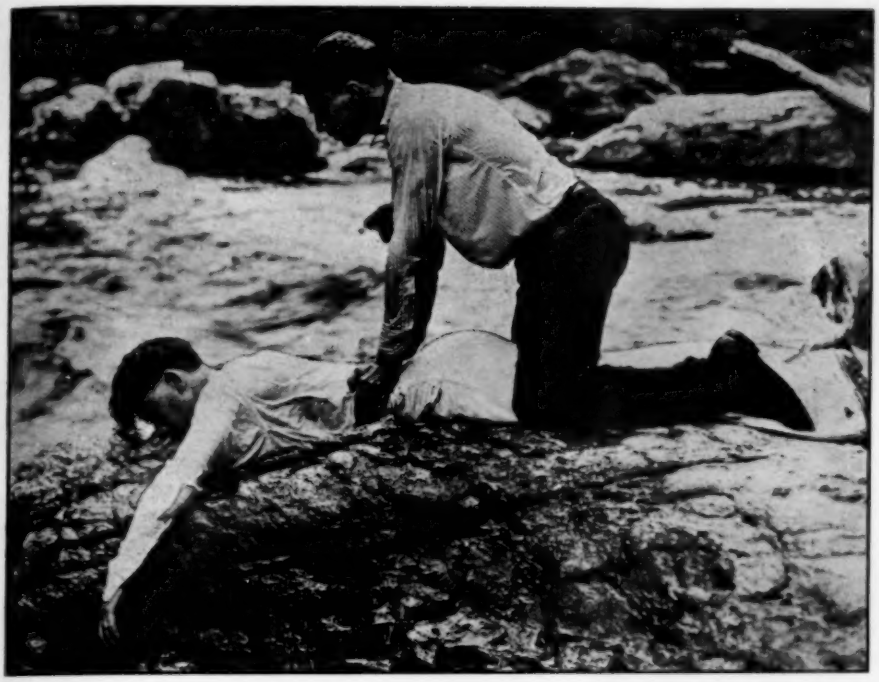

ARTIFICIAL RESPIRATION when promptly applied has saved many from death by drowning

Bringing the "Dead" to Life

(*Continued from page* 34)

cording to a statement by the head physician of the hospital just published there. The patients suffered from thrombosis, a condition whereby blood clots are formed in the blood vessels. The thrombi, or clots, had entered the heart, stopping up the artery of the lungs so that the blood could not be emptied from the left half of the heart. The young physician, Dr. Blarence Crafoord, assisted by Dr. J. P. Stroembaeck, at once decided to attempt operations, quickly made incisions in the heart, removed the thrombi, thus restoring the circulation and brought the patients back to life.

Both patients recovered and now seem to be out of danger. This operation was first made by a German surgeon, Dr. Trendelenburg, and only two or three successful cases are so far recorded in the history of medicine. It requires a minute observation of the patient by the physician who must undertake the operation at what might be called "the moment of death," and the surgeon has a very short space of time, only about fifteen minutes, at his disposal if he is to have a chance of success. The head physician of the hospital, Dr. K. H. Giertz, is preparing to lay these remarkable cases before his colleagues at a meeting of the society of Stockholm physicians.

It is a remarkable thing that the simplest means that man has devised to push back the hand of death when it reaches out to snatch at the living, are as effective in their different fields of application as those of the most delicate technique. A boy who rescues his comrade from drowning by the resuscitation methods he has learned in a boy scout camp has achieved as great success as the skilled surgeon who coaxes a refractory heart to beat again, that of saving a human life.

The method that has probably brought back into existence the greatest number of victims of drowning, electric shock and asphyxiation is artificial respiration, a procedure that has been practiced in one form or another for over a hundred and fifty years.

By this is meant the artificial expansion and contraction of the lungs by the hands, carried on until enough life-bearing oxygen from the air can be forced into the lungs and so into contact with the blood, to keep things going until the inert body picks up again of its own accord the natural, regular rhythm of the respiratory process.

Two hours has in the past been considered the limit for which this time-honored method for salvaging for human life will work. In a new set of regulations, however, governing the administration of artificial respiration by the prone pressure method that will soon go into effect not only in the army and navy but also in every factory and mine in the land, where there is great industrial hazard, this period has been considerably prolonged.

Dr. L. R. Thompson, chief of the section of industrial hygiene and sanitation at the U. S. Public Health Service, under whose direction the regulations have been compiled, urges that everybody administering this form of first aid keep it up for at least four hours, because there are cases where men have actually recovered who have been "out" this length of time.

New regulations for restoring life have come about as the result of a recent conference of representatives from the U. S. Army, the U. S. Navy, the U. S. Bureau of Standards, the U. S. Bureau of Mines, the American Telephone and Telegraph Company, the American Gas Association,

(*Just turn the page*)

PSYCHOLOGY

Cause of Stammering Traced

When a little boy says, "I-I-I-I can't f-f-find my book," his badly jointed speech is the result of a sudden abnormal rush of blood to his brain, according to Samuel D. Robbins, director of the Boston Stammerer's Institute.

Back of the brain condition is a still more fundamental psychological cause, he stated in reporting the results of the investigation. Such emotions and states of mind as embarrassment, over-anxiety, over-eagerness, timidity, self-consciousness, tension, and fear of stammering all send surplus blood to the brain and aggravate stammering.

"To overcome stammering, the individual's entire emotional life must be reorganized," he said.

"Once stammering has commenced never call a young child's attention to the fact that his speech is abnormal. Always speak slowly and calmly in a low pitched voice when the stammerer is within hearing. If a child repeats a letter or word or unduly prolongs a consonant, do not ask him to repeat the word or show that you have noticed his difficulty. Answer his question in as nearly as possible the same words he used, beginning with the first word on which he stammered and prolonging its first vowel two seconds.

"In a month or two the child should unconsciously adopt this rhythm of speech and suddenly stop stammering. If he adopts the prolonged first syllable it will unconsciously shorten down to normal."

Bringing the "Dead" to Life

(*Continued from page 37*)

the American Red Cross, the National Electric Light Association, the Industrial Association of Physicians, and the National Safety Council. At this meeting experts undertook to sift out the best and most efficient measures of artificial respiration and set them down in a set of directions that will be taught workmen engaged in wiring, electrical work and other especially hazardous occupations.

While the aim of any method employed in reviving the victim of electric shock or resuscitating a man from drowning or gas asphyxiation is the same, the difficulty lies in the fact that there are different kinds of technique. It must be remembered that the men who do most of the life saving are not qualified physicians but such members of the factory force as happen to be on the spot when the accident occurs. They have been trained in one or another of the current artificial respiration methods by the first aid instructors of the company by which they are employed. Men in one plant are given the same training but there may be included here and there in the personnel a man from another concern who has been trained a little differently in life-saving methods.

An accident happens. If it is in a mine, the victim may have been overcome with carbon monoxide gas, that odorless, colorless carrier of death that results from incomplete combustion.

The first job is to get him out into uncontaminated atmosphere. The next is to adjust over his face an oxygen inhaler, usually kept on hand in mines, much as fire extinguishers are in apartment houses. These inhalators will supply pure oxygen to counteract the poisonous effects of the gas. The next thing is to get the victim's breathing started by the use of artificial respiration.

Now one rescuer may have learned that the victim should lie on his back. His fellow good Samaritan may have been taught the prone pressure method, whereby the victim is stretched out face down. Argument ensues and valuable time is lost.

The nerve cells in medulla oblongata, at the base of the skull, control breathing and are extremely sensitive to an interruption of the blood supply. About twelve minutes is the longest period of suspended animation that they can stand. The whole bodily mechanism must be started in motion before this time is up. At a time when every second counts it is important that everybody should be trained to follow the right procedure.

An outstanding case that has been recorded on the honor roll of artificial respiration by the National Safety Council is that of the rescue of a patrolman of an electric power company in Dallas, Texas, by his wife. The patrolman, whose name was Stanley, threw a supposedly linen tape over a 60,000-volt conductor to measure the distance from the highway. The tape proved to be what is called metallic tape, that is, every third thread had a small wire woven into it. Mr. Stanley was knocked out completely by the discharge and both feet and his left arm were badly burned.

The accident occurred on a lonely road about 15 miles from Dallas but, although alone in the emergency, Mrs. Stanley's presence of mind did not desert her. She at once applied the prone pressure method and in about 15 minutes her husband began to breathe again. Mrs. Stanley then assisted him to an automobile, and, although she had never driven before, with his directions she managed to reach the nearest town, two miles away, where Mr. Stanley was transferred to an ambulance. His life was saved.

A very interesting experiment is now being conducted by Prof. C. J. Wiggers, head of the department of physiology at Western Reserve University, Cleveland, Ohio. Apparatus is being set up with which motion pictures of living heart beats can be made.

This is the first step in the scientist's attempt to find a method by which life can be restored to persons whose hearts have stopped beating as the result of electric shock.

"Death from electric shock may come in two ways," Prof. Wiggers explains. "When the shock has stopped respiration by paralyzing that part of the brain known as the medulla oblongata, and when it has actually stopped the pumping action of the heart.

"When the case is merely one of shut-off breathing, life can often be restored by applying artificial respiration either with the hands or with the pulmotor, but when unconsciousness is the result of heart stoppage, then an attempt to bring back life with a pulmotor or by the prone pressure method of artificial respiration is useless. The victim can only be restored to life by causing his heart to start beating again.

"Science already knows exactly what happens to a human heart when a charge of electricity hits it. The technical name for it is 'ventricular fibrilation.' In plain language this means that the blood has been forced from the ventricles—the chambers of the heart—into the arteries by the contraction of these chambers.

"This action is possible because all the tiny fibers that make up the ventricles work in unison. Fibrilation is the term applied when there is a sort of uncoordinated fluttering of these fibers.

"What we hope to find out is just why these fibers act as they do in the case of electric shock and how they can be quickly restored to normal life-saving action."

It is now possible to remove all but one-billionth of the original air from a vacuum tube.

More than 400 species of fleas are known, but less than a dozen are troublesome to man.

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ENTOMOLOGY

Insect Zoo in Paris

What might be called an insect zoo has just opened in Paris where the public is turning its attention from the lions and tigers in the menageries to see the new vivarium in the *Jardin des Plantes*. Here it has the extraordinary experience of watching insects in their natural environments, each group shown in an indoor glass cage fitted up to seem like home to the inhabitants.

This somewhat unique accomplishment has not been so easy as it might seem. The insects come from various climates and their requirements are naturally vastly different. Thus a complicated heating system is necessary to simulate the African desert in one cage and a coolish temperature in the next. Heat, humidity, and light have all formed tremendous problems solved by the ingenuity of Dr. Jeannel, director of the vivarium.

In some cases it has been necessary to fool insects for the benefit of the public. In their desire to establish the closest possible contact with objects about them, the scorpions, if left to their own devices, would completely disappear from sight by burying themselves and leave the public to look at a seemingly empty cage. However, they seem very well satisfied to hide beneath plates of transparent glass through which they can easily be seen.

A pair of giant phasmas have shown that hens are not the only ones whose reproduction is affected by electric light. For two months they failed to reproduce but the day an electric light was put in their cage they responded accordingly.

Several cages are devoted to exhibits of insect mimicry. There are the giant phasmas just mentioned which look like the green leaves they feed upon, and others which exactly resemble the straw colored branches to which they are clinging. The observer must watch closely for some movement to tell which is which.

The vivarium is for the purpose of exhibiting all cold blooded animals in their natural environments, but the insect exhibits are the most unusual part of the program.

Science News-Letter, January 21, 1928

"Thousand legs" really have about 200.

Eighteen feet is now considered the minimum width for main highways.

HYGIENE

Sunlight Lost by Smoke

Manhattan's great smoke screen cuts out 42 per cent of the morning sunlight that is every Gothamite's just due on winter days. At noon the loss is 18 per cent. The figures for this indictment of the smoke nuisance in large cities have been compiled by experts of the U. S. Public Health Service. Loss of efficiency from decreased lighting is not the only result of excessive smoke in manufacturing centers, they maintain. It also cuts out to an appreciable extent the ultra-violet rays necessary for good health.

The importance of getting rid of smoke is emphasized for the preservation of eyesight and health generally, as well as prevention of accidents. On foggy days the loss of light runs even higher than the figures quoted, it was stated.

Science News-Letter, January 21, 1928

PSYCHOLOGY

Healthy Children Hear Best

Health and nutrition may play a part in determining keenness of hearing, according to an investigation made by Dr. Dana W. Drury, of Boston.

Using an audiometer, Dr. Drury measured the acuity of hearing of four groups of children. The best hearing was found among a group of boys in a school where care is taken to maintain high physical and nutritional standards. The next best hearing average was made by children at an institute for the blind.

One hundred children from the Boston public schools averaged just a little lower than the blind children, and a group of children in a Massachusetts institution for state wards who are crippled and deformed had the least keen hearing of all.

Of the numerous groups of different ages studied by Dr. Drury, the Harvard football squad at the close of the playing season exhibited the highest level of auditory keenness.

Science News-Letter, January 21, 1928

Anacondas in captivity have been known to refuse food for almost a year.

Aluminum nails, to replace copper and brass, have been put on the market.

The experiment of raising marten and mink on farms for their fur is being tried.

ARCHÆOLOGY

Tomb Shows Barbaric Scene

A royal chariot 5,000 years old, the two asses that once drew it, and three grooms, each slain at his post, are the latest revelations from a royal tomb in ancient Ur of the Chaldees.

The newest treasures from Ur show that in 3500 B. C. Mesopotamia was far in advance of Egypt in material civilization, according to a report from C. Leonard Woolley, director of the joint archæological expedition of the University of Pennsylvania and the British Museums.

The body of the king has not been found, but bodies of his musicians, servants, and gold decked women of his harem have been discovered in the burial chamber. A harp adorned with gold and lapis lazuli was the first clue to the royal burial. Against this harp, Mr. Woolley reports, was crouched a body, the arm bones actually mingling with the decayed wood of the sounding box, as if death overcame the harpist as he played.

In a trench near the chariot lay the bodies of five men servants, and in two parallel rows lay ten harem women and two children. All the women were dressed alike, wearing the same elaborate headdress, huge crescent shaped gold earrings, and other ornaments—decked gaily for their venture into the next world with their royal master.

A box, considered to be a clothes chest, was surrounded with piles of vases and bowls, copper tools and weapons, a scepter of lapis and gold, two gold lamps, a chalice, and a little gold toilet set. Around the chest, even under the piled offerings, lay human bodies, not properly laid out for burial, but huddled up as if death had overtaken them suddenly.

"There is no question here of the faithful servant dying and being buried with his master," Mr. Woolley writes. "The grooms at the asses' heads were killed in cold blood. They were chattels which the king took with him in case he might have need for them hereafter, just as he took his silver and gold vessels, his heavy copper adze, a set of spears with golden heads, the women of his harem, and his gaming board and dice.

"In one part of the shaft area we found no objects of any kind, but here was a rectangle of large rough limestone imbedded in clay. It may well be that this was the altar on which were sacrificed the human victims to the king's majesty."

The moral aspects of the early civilization which the grave presents

(Just turn the page)

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Excavations at Ur

(*Continued from page 39*)

are wholly new and unexpected, Mr. Woolley declares. Somewhat similar customs obtained in the burial of kings of the first dynasty of Egypt. But that such a custom ever prevailed in Mesopotamia was undreamed of from historic reords or from previous archæological discoveries.

"For the history of civilization the discovery is of the greatest importance in both its aspects," Mr. Woolley concludes. "It has supplied definite information which is absolutely new to science, and it affords material for the theories still more far-reaching."

Science News-Letter, January 21, 1928

Sugar is bleached by finely ground carbon.

Glow worms and dragon flies have keen sight.

The oldest fishhook dates from the Old Stone Age.

The Chinese were the first to make a beverage of tea.

Afghanistan, a country larger than France, has no railroads.

Rosin is used to size paper, in order to make it waterproof.

Egyptian priests used hypnotism to awe and influence the people.

Public schools for deaf children are held in 22 cities in Wisconsin.

Processes for making gold leaf have not changed in the past century.

John Ericsson, the inventor, worked at surveying at the age of twelve.

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ARCHÆOLOGY

Expedition Seeks "Living Archaeology"

Convinced that there is a vast field of living archæology among the little-known modern Indian races of Mexico, that it can cast as much light on their ancient past as ruined temples and hieroglyphics, Dr. Frans Blom, archæologist of Tulane University in New Orleans, has just left for Chiapas.

Before leaving Mexico City Dr. Blom stated that he will study the modern scenes of the ancient Mayan Empire that flourished in the early centuries after Christ in southern Mexico and Central America. He will penetrate territory as yet unexplored, and hopes to fill in many blank spaces on modern maps of southern Mexico.

Dr. Blom is heading a truly cosmopolitan group of explorers, six in number. He himself is a Danish archæologist and geographer with about four years' experience in the Mexican field, having first worked with Dr. Manuel Gamio, well-known Mexican archæologist.

With him are two American college boys, who, Dr. Blom said, are boys in years and looks only. Louis Bristow, 21 years old, a medical student of Tulane University, will have the job of collecting anthropometric data, such as the taking of foot and hand prints of modern Indians, as well as blood samples, and making measurements of any ancient bones or skeletons that may be encountered. This data will be studied later by scientists at Tulane University.

The second student, Felix McBryde, aged 20, has specialized in natural sciences. His hobby is birds, and he expects to be able to make many original observations on the side, in the "Land of the Quetzal," the bird whose feathers made the "plumed serpent" of Mexico famous. The two students were picked five months ago by the president of Tulane University and have been preparing for the trip ever since. Mr. McBryde has been studying photography and will take photographs and motion picture films of the expedition.

The fourth member of the party is Gustavo Kanter, 24 years old, a Guatemalan boy of German parentage, who speaks two of the Indian languages that will be encountered in the tropical jungles, Chug and Jacaltecan. The fifth is a Mexican of Spanish and Indian blood, Ciriaco Aguilar, aged 28, who speaks the Tzeltac tongue. Aguilar will manage the transportation of the party.

The sixth member of the party is Prof. Carlos Basauri, ethnologist, of the Mexican Department of education, who has made numerous ethnological studies of Indian races of Mexico for the department of Rural education. Prof. Basauri will study manners, customs, religions, and other characteristics of the little-known races to be encountered, as well as gather physical anthropological data.

The expedition will be seven months on the trail which will take them through Tapachula, Comitan, Ocosingo and El Desierto de Tzendales, all in the Mexican state of Chiapas, to Flores on Lake Peten and Uaxactun in Guatemala, and then through Quintana Roo and Yucatan. The expedition will end at Chichen Itza, where the Carnegie Expedition of Washington, D. C., is now excavating under the direction of Dr. Sylvanus Morley.

Dr. Blom is by temperament peculiarly fitted for exploration among strange people in unknown territory, for he has the reputation of having a "way" with Indians. The party will depend for the most of their food upon the success of these "ways" with the natives, and upon their rifles. Asked what Indians do who have never seen a white man when an exploration party approaches, Dr. Blom replied that they act like Americans when a circus comes to town. They stand around and stare and poke their noses into the baggage and equipment.

The party is taking along the minimum of impedimenta. The only food they carry is rice, beans, sugar, salt and coffee. The two college boys have had training in first aid and the party is equipped with medicines. They have all been inoculated "against everything," the archæologist stated. They will arrive in Chiapas at the beginning of the dry season. The first part of the trail will be through tropical jungles where there is plenty of shade and water, but they are running certain risks when they get up into Quintana Roo and Yucatan later, unless the rainy season begins in time for them.

The difference between this archæological expedition and others in the field is that they are especially equipped to study the modern characteristics of the strange races they will encounter, as well as the ruins of ancient temples and carvings on rock. Many races of Indians now existing in the territory they will cross have changed very little from prehistoric times, Dr. Blom said, and many customs exist today which can throw much light on archæological mysteries.

An archæologist will dig some strange object from the ground near a ruin, said Dr. Blum, and while he is theorizing as to what it is, a little Indian boy may come up and look at it and say, "Why my mother has one of those too." Thus many times, the explanation of ancient relics may lie in modern customs of the Indians, and the story of the past can be much better reconstructed by a study of the present, together with archæological remains.

Science News-Letter, January 21, 1928

ASTRONOMY

Comet Not Old Visitor

Suggestions that the recently discovered Skjellerup's comet is the same as De Vico's Comet, which came in 1848 are not substantiated by the latest calculations of the comet's path. It is therefore highly improbable that they are the same, says Dr. Harlow Shapley, director of the Harvard College Observatory. The latest calculation of the orbit that he has received is one computed by Dr. George Van Biesbroeck, of the Yerkes Observatory. This orbit, says Dr. Shapley, shows that the orbits of both De Vico's and Skjellerup's comets were both in the same plane. The latter, however, came to within one quarter the distance of the sun of the former, and its direction from the sun when closest was quite different.

Skjellerup's comet has now faded to the fifth magnitude, and is gradually moving south, so that soon it will be seen only with powerful telescopes from southern observatories.

Science News-Letter, January 21, 1928

More than four-fifths of Yellowstone Park is heavily forested.

The hunting leopard of India has traits of both the dog and cat families.

Ponies were first dwarfed by living in cold unfavorable surroundings in northern Europe.

In a region of oil fields, motorists in Bogota, Colombia, pay 37 cents a gallon for gas.

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Classics of Science: The Dip of the Magnetic Needle

In constructing Gilbert's instrument, a satisfactory, if less durable, case may be made from heavy cardboard with a celluloid cover. All the care which he advises is necessary to balance the magnetic needle exactly.

WILLIAM GILBERT OF COLCHESTER, PHYSICIAN OF LONDON, ON THE LOADSTONE AND MAGNETIC BODIES, AND ON THE GREAT MAGNET THE EARTH. A new physiology, demonstrated with many arguments and experiments. A translation by P. Fleury Mottelay. New York, 1893.

Inclination

We come at last to that fine experiment, that wonderful movement of magnetic bodies as they dip beneath the horizon in virtue of their natural verticity; after we have mastered this, the wondrous combination, harmony, and concordant interaction of the earth and the loadstone (or magnetized iron), being made manifest by our theory, stand revealed. This motion we have so illustrated and demonstrated with many experiments, and purpose in what follows so to point out the causes and reasons, that no one endowed with reason and intelligence may justly contemn, or refute, or dispute our chief magnetic principles. Direction, as also variation, is demonstrated on the plane of the horizon whenever a magnetic needle poised in equilibrium comes to a rest in any fixed point of it. But inclination (dip) is seen to be the motion of the iron bar, first balanced on its axis and then excited by a loadstone, from that point in the horizon, one end or pole tending toward the earth's centre. And we have found that this inclination differs in the ratio of the latitude of each region. Now this movement is produced not by any motion away from the horizon toward the earth's centre, but by the turning of the whole of the magnetic body to the whole of the earth, as later we will show. Nor does the needle descend below the horizon in the ratio of the degrees of the elevation of the pole in the given region, and with an equal arc of the quadrant in any oblique sphere, as later will be seen. But how much the needle dips in every horizon can now first be ascertained by means of an instrument (which, however, is not very easily constructed), just as in sun-dials when the needle returns to points in

DIP INSTRUMENT. A reproduction from the above-quoted book of Gilbert's design for a magnetic dipping needle and its case

the horizon, or as in the mariner's compass.

The Instrument

Get a circular planed board with diameter at least six finger-lengths, which is to be fasted to one face of an upright square post and to rest on a wooden base. Divide the periphery of the instrument into four quadrants, and then each quadrant into ninety degrees. In the centre of the instrument drive a brass nail, and in the centre of its head bore a small hole well reamed and smoothed. Adjust to the instrument a circle or ring of brass about two finger-breadths wide, with a transverse plate or flat bar of the same metal fastened across the middle of the ring and serving for horizon. In the middle of this horizon bar bore another hole which shall be exactly opposite to the centre of the instrument, in which a hole was already bored. Next get a steel wire such as is used for compass needles, and at the exact middle of it and at right angles to it pass a very thin iron axis through it so that the middle of the axis and the middle of the needle shall exactly meet; let this inclination (dipping) needle, the ends of the axis having been inserted into the holes, be suspended so that it may move freely and evenly on itself in most exact equilibrium, and so must be rubbed with a powerful loadstone, else it does not dip at the true point or goes beyond it and is not always at rest in it. A larger instrument can also be employed, of ten or twelve finger-lengths diameter, but in that case there is more trouble in balancing the needle exactly. Care must be taken to have the needle of steel, also that it be straight, and that the sharp points of the axis on both ends be at right angles with the needle itself, and that it pass through the very centre.

The Needle and the Earth

As in other magnetic movements there is strict agreement and a clearly visible, sensible accordance between the earth and the loadstone in our demonstration, so in this inclination is the accordance of the globe of the earth and the loadstone posi-

(Just turn the page)

Lost Mexican History Found

Another page of Mexico's past has just come to light. One of the precious books of Bernadino de Sahagun, famous colonial historian who came to Mexico 400 years ago, has been discovered in a secret archive in the Vatican at Rome, and published for the first time in America in the Mexican Historical Review by Zelia Nuttal, well-known woman archæologist of Mexico City.

The book is called "Coloquies and Christian Doctrines By Which The First Twelve San Franciscan Friars Converted the Indians of New Spain." It has both an Aztec and a Spanish text. The religious authorities of New Spain considered it dangerous to perpetuate the memory of the idolatrous practices of the Indians, and most of Sahagun's works were suppressed when the Inquisition was established in Mexico in 1572.

Sahagun came to Mexico in 1529, mastered the Aztec language, and began to make researches on the religious and social customs and history of the native races prior to the Conquest in 1547 using an original method to get the most reliable information. He called together the elders of the tribes and the most learned men of the town, and got them to put down what they knew in their own hieroglyphics, and explain to him in Aztec as well.

He worked without aid and against the opposition of his superiors for many years, and when he was an old man he was forced to destroy and revise the fruits of his work. His own history, however, which is one of the most noted records of its kind, tells, by the volume of work he actually did, how much has been lost.

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Dip of Magnetic Needle

(*Continued from page* 43)

tive and manifest. The true and definite cause of this great and hitherto unknown effect is as follows: The loadstone moves and revolves until one of its poles, being impelled toward the north, comes to rest in its predetermined point on the horizon; the pole that comes to a stand looking north is (as appears from the foregoing rules and demonstrations) southern, not northern, though till now every one has supposed it to be northern because it turns to the north. An iron wire or versorium touched with this pole of the stone turns south, and is made northern because rubbed at the south end of the stone; just as when the point of a versorium is magnetized in that way it will be directed toward the earth's south pole and to that will turn, while the other end, the crotch, will be southern and will turn to the northern regions of the earth (the earth itself causing the motion), for thus does direction result from the bearings of the stone and the needle, and from the earth's verticity. But inclination (dip) is when the needle accurately that it may not turn away from any one degree or point marked on the circumference more than from any other, but may rest easily at any one point. Have the instrument fastened upright to the face of the post, and on the edge of the base set a very small magnetized versorium [compass]. The needle thus nicely balanced, now rub skilfully at both ends with the opposite poles of a loadstone, but do this with the greatest care lest the wire be in the least bent; for unless you do all this with great skill and dexterity, you will reach no result. Next get a second brass ring, a little larger than the first, so as to go round it, and to one rim fit a cover of glass or of very thin mica; this, when placed over the other ring, encloses the whole space, and the needle is protected from dust and currents of air. The instrument being now complete, set it up perpendicularly with the small versorium on the base, so that when thus erected exactly upright it may tend to the true point of the magnetic direction. Then that one of the needle's ends which in northern latitudes looks to the north dips below the horizon; but in southern latitudes the end of the needle that looks south tends toward the earth's centre in a certain ratio (afterward to be explained) of the latitude of the region in question from the equator on either side. But the needle turns to the body of the earth, its south end pointed to the north, in any latitude away from the equator. For it is a fixed and unchanging law that exactly beneath the celestial equator, or rather on the equator of the terrestrial globe, the magnetic inclination or dip of the needle is *nil*; and in whatever way it may have been excited or rubbed, it rests exactly on the plane of the horizon in the inclination instrument, provided it be first duly balanced. The reason of this is, that the needle, being at equal distance from the two poles, does not in its rotation dip toward either, but stands balanced, pointing to the level of the equator, as it does when mounted on a sharp point or floating free and unhindered on water.

But when the needle is in any latitude from the equator, or when one of the earth's poles is raised (I do not say raised above the visible horizon, like what is commonly reputed to be the pole of the revolving world in the heavens, but raised above the horizon of the centre or above its own diameter, equidistant from the plane of the visible horizon, which is the true elevation of the earth's pole), then inclination appears and the needle dips in its meridian towards the body of the earth.

William Gilbert, more properly Gilberd, was born at Colchester, England, May 24, 1544, and died November 30, 1603, either in London or in Colchester, where he was buried. In 1558 he entered Cambridge University, and there is a tradition that he attended Oxford as well. In 1569, at the age of 25, he took the degree of M. D. After spending some time in travel and the practice of his profession on the Continent, he returned to England. He became a Fellow of the Royal College of Physicians in 1573, and filled several of its offices, becoming President of it in 1600. The next year he was appointed Physician-in-ordinary to Queen Elizabeth, who, upon her death in 1603, left him an annual pension to further his philosophical studies. In the comprehensive manner of the Elizabethans, Gilbert combined with his profession the study of chemistry and astronomy, but his fame rests upon the compilation of isolated observations of magnetic and electric phenomena, supplemented by many striking experiments and observations of his own, which he published under the title De Magnete in 1600. The extract here quoted is from the first complete translation of this work from Latin into English. Another translation was made by S. P. Thompson in 1900. The fact that the book waited three hundred years for translation into the native tongue of the author is probably due in great part to the death of the author, probably of plague, only three years after its publication. His library, instruments and loadstones, which he willed to the College of Physicians, were destroyed in the Great Fire of London.

Say you saw it advertised in the SCIENCE NEWS-LETTER

ANTHROPOLOGY

New Neanderthal Skull

By E. N. Fallaize

Mr. Fallaize is the secretary of the Royal Anthropological Society of London, England.

New relics of ancient man have been uncovered in the famous English stronghold at Gibraltar, it was announced for the first time in public at a recent meeting of the Royal Anthropological Institute.

Miss Dorothy Garrod, who found parts of a Neanderthal skull at the Devil's Tower, Gibraltar, in the early summer of 1926, returned to carry out further excavation in the cave in the autumn of the same year. In clearing the deposits in the cave and outside the entrance down to bed rock, she came across further fragments of a human skull, including the lower jaw. Ever since then members of the anatomy department of the University of Oxford have been engaged in the extremely delicate task of clearing the fragments from the hard deposit in which they were found, and studying them.

Although the skull is imperfect and all the fragments do not come from the same side of the head, symmetrically corresponding casts have been modelled on the bones that have been found. It has thus been possible to show that all the bones belong to the one skull, and to reconstruct the whole skull. A cast of the inside of the skull has been made, showing the form of the brain. This has been studied by Prof. Elliot Smith of University College, London. The skull itself has been studied by L. H. Dudley Buxton of Oxford, who is responsible for the reconstruction.

The cave which Miss Garrod excavated in the spring of 1926 was first observed by the Abbe Breuil during the World War, when excavation was impossible. The portions of the skull first discovered were found embedded in hard travertine rock, from which they had to be blasted with dynamite. In the excavations in the autumn the cave was cleared down to bed rock, and the further fragments of the skull were discovered. The associated remains of animals indicated that the skull was of Pleistocene or Glacial age, while the implements were of upper Mousterian type. Certain animals, usually found in Pleistocene caves, were not present, but these were such as belonged to a climate colder than Spain, and therefore would not be expected to appear. The cave had apparently been used as a place of habitation, but only in certain seasons, as it faces due north.

Although there are certain gaps which make reconstruction a matter of considerable difficulty, there is no reasonable doubt that the bones belong to the same individual, as many of the pieces fit together, and those which do not, can be shown to belong to the same skull by duplicating the bones.

Apart from other details, the age is best indicated by the teeth. The first permanent molars were never erupted, but were nearly ready to erupt. It is therefore reasonable, Mr. Buxton says, to put the age at between the fifth and sixth year, as the permanent molars erupt in the latter year. This is merely an indication as we have no evidence that the teeth of Neanderthal man erupted exactly at the same time as those of modern man.

It seems probable from the size and general characters that the sex was male. Mr. Buxton further points out that although the brow ridges have not yet attained that development which is so marked a feature in Neanderthal man, no doubt owing to the age of the specimen, the remains certainly belong to a member of that branch of the human family. Apart from details, the most striking characters are the low flattened form of the massive jaw.

Science News-Letter, January 21, 1928

Atoms Limit Accuracy

No matter how accurate and delicate human measuring devices may become, there is a definite limit beyond which measurements cannot be pushed. This is an effect of the structure of the atoms of matter themselves, Dr. Arthur E. Ruark, of the Mellon Institute at the University of Pittsburgh, said at the recent meeting of the American Physical Society. The reason for this, he said, is that the measuring devices themselves are always made up of atoms and are constantly changing.

"For example," said Dr. Ruark, "a measuring stick undergoes changes in length due to heat motions of the particles composing it and measurements of length made with its aid may not be pushed beyond a certain limiting accurracy even on the assumption that the observer is possessed of almost super-human skill."

Science News-Letter, January 21, 1928

GENERAL SCIENCE

Changing Our Environment

For the first time in the long history of the earth its living creatures are changing their physical environment by their reasoning powers.

Making this observation and noting the rapidity of the revolution of civilization now caused by science, a scientist-philosopher, Dr. F. R. Moulton, formerly a University of Chicago astronomer but now a power company executive in Chicago, looked at man and his world predicted the effects that science will produce in the future.

These, in essence, are the results of his analysis:

We are so immensely better off than our forefathers that no one has an adequate conception of the changes a hundred years have witnessed. For instance, for every man, woman and child in this country more than ten tons of freight are moved a mile every day, at a cost of only eleven cents, or twenty-five minutes of average labor. So vast is the amount of electrical power used that to duplicate it every inhabitant would have to work 24 hours a day and do the work of an able-bodied man. Yet this amount of labor is produced at the cost of less than ten minutes of human labor daily. And all this vast energy is equally available to all classes.

These vast changes in man's surroundings will affect his mental and physical characteristics, Dr. Moulton predicted.

Science through its taking of products from the ends of the earth and making them into automobiles and other new necessities will tend to end war. Easy and cheap communication and transportation, combined with the insistent demand for foreign products, most easily obtained through peaceful trade, will keep nations at peace and form great federations of countries. Government will become less politics and more science.

The brain of man, influenced by universal education, opportunities for leisure and study, the ceaseless and intense effects of noises, papers, books, movies, radio, travel and the thousand and one stimuli of today will, in Dr. Moultin's opinion, undergo radical changes.

"Our successors, say a million years from now, may surpass us as much in reasoning powers, in creative imagination, in esthetic appreciation and in lofty aspirations as we surpass in these respects our predecessors of a million years ago," Dr. Moulton said.

Science News-Letter, January 21, 1928

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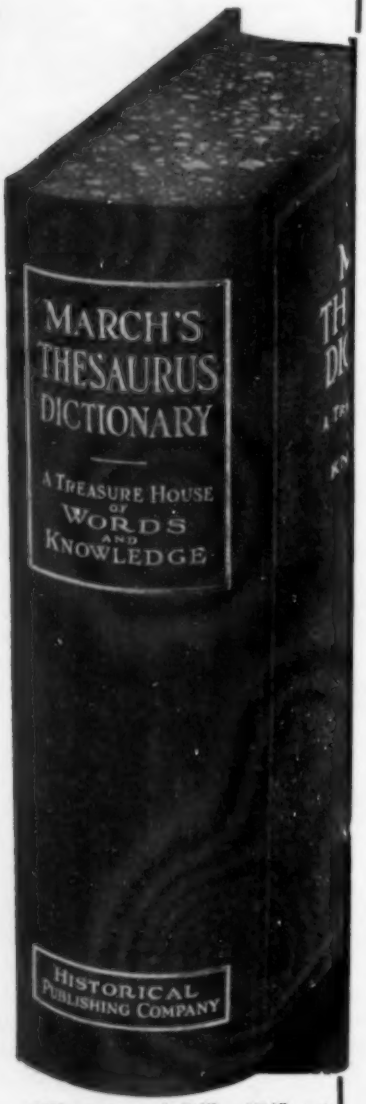

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First Glances at New Books

THE STORY OF ARCHITECTURE—Thomas E. Tallmadge—*Norton*. In which is traced the growth of architecture in America from the earliest times down through the horrors of the parvenu eighties and the gay nineties to the new era of skyscrapers as exemplified by the American Telephone and Telegraph Building in New York City and the Tribune Tower in Chicago.

Science News-Letter, January 21, 1928

WILDWOOD FABLES—Arthur Guiterman—*Dutton*. This deserves notice in a scientific weekly since it contains such verses as

Said Guinea Pig Two, "You may shortly see
A paper with me for a basis,
As the living and breathing epitome
Of virulent *B. Anthracis!*"

Said Guinea Pig Three, "A mammoth debt
The Science of Medicine owes us!
Why, look at me and the way I get
With doses of *B. Typhosus!*"

Science News-Letter, January 21, 1928

MAN THE ANIMAL—William Martin Smallwood—*Macmillan* ($2.50). A concise discussion of the physical basis of life, blending into a brief outline of psychological processes and a forward look from the evolutionary background.

Science News-Letter, January 21, 1928

A SELECTED LIST OF CHEMICAL BOOKS—Crane and Patterson—*Wiley*. A list that should be in every public and school library and in every high school or college department of chemistry for references to further reading on special subjects or popular books. Works of special interest or importance are indicated by stars as in Baedeker's Guide Books.

Science News-Letter, January 21, 1928

ANIMAL ECOLOGY—Charles Elton—*Macmillan* ($4). Something like this has been wanted for a long time; teachers and students alike will welcome this work.

Science News-Letter, January 21, 1928

THE NERVOUS CHILD — H. C. Cameron—*Oxford Press*. The third edition of a small book on a subject that baffles many mothers — and fathers. Dr. Cameron touches upon every phase of child life where nerves threaten to dominate personality.

Science News-Letter, January 21, 1928

THE STORY OF THE AMERICAN INDIAN—Paul Radin — *Boni and Liveright* ($5). A panorama of native life in America, recounting in readable style what scientists have learned about Maya and Aztecs, Pueblos and Mound Builders, and on northward to the totem carving tribes of the far northwest.

Science News-Letter, January 21, 1928

TOTEM AND TABOO—Dr. Sigmund Freud. Translated by A. A. Brill.—*New Republic* ($1). That the savage and the neurotic have much in common is the theme of this little paper-bound book of essays. For those who look upon the mental processes of primitive men as mysterious and altogether beyond comprehension, Freud's discussions will be thought-provoking.

Science News-Letter, January 21, 1928

SYMBOLISM—ITS MEANING AND EFFECT—Alfred North Whitehead—*Macmillan* ($1.50). A philosopher examines one of the most complicated and controversial of all classes of psychological phenomena.

Science News-Letter, January 21, 1928

THE UNCONSCIOUS—Edited by Mrs. W. F. Dummer—*Knopf* ($2.50). If you have ever wondered what a psychologist of the I'm-from-Missouri behaviorist school thinks about the unconscious, and whether it could be printed, you need wonder no more. This symposium presents the views of a well known exponent of behaviorism, Dr. John B. Watson; also the equally interesting points of view of Dr. William A. White, Dr. John E. Anderson, Prof. Kurt Koffka, and other scientists, each of whom discussed the subject from a different specialized angle. Originally a series of talks under the auspices of the Illinois Society for Mental Hygiene.

Science News-Letter, January 21, 1928

THE PSYCHOLOGY OF PERSONALITY —P. F. Valentine—*Appleton* ($2.50). An interesting attempt to take personality apart—like a watch—and to show how the different screws and springs make a fine adjustment or an erratic one. A book suitable for the average reader, and for classes where psychology must be studied in an applied aspect.

Science News-Letter, January 21, 1928

CASTILE SOAP—R. W. Mitchell—*Author*. An exhaustive monograph covering the origin, history and significance of the term.

Science News-Letter, January 21, 1928

BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

Coyote

Bitterly through the frigid night, sending a chill to the very marrow of your bones, sounds the howl of the coyote. Perhaps you may get a glimpse of this wild dog of the plains and foothills, outlined against the moon on the edge of a butte. From far away, down the canyon, another answers, the echo multiplying his call. Then suddenly from the shadows, almost behind you, one or two more send up that same hair-raising howl, and the concert is on. Very disturbing to a newcomer, but some of the old-timers actually seem to like coyote music. Makes the country seem less lonesome, they say.

There really is a wide difference between a Westerner's feeling for the coyote and the hatred he holds for the big "lobo" wolves. The latter are bold and strong, and take toll of sheep and colts and calves, and even cut out weakened full-grown stock. Coyotes are as cunning as their larger cousins, but are utterly lacking in courage, so that a well-tended herd or flock has much less to fear from them. Cattle or sheep men will pay hunters high prices to eliminate a single wolf with a reputation as a killer, but only when coyotes become too numerous do they take measures against them, and then by wholesale. Wolves may be individuals; coyotes are considered only as masses.

Yet despised as he is, even to the point of contemptuous tolerance, the coyote has his uses. He is almost as quick to find carrion as the buzzards are, and even a better hand at polishing bones. Thus he makes himself an automatic, self-propelled garbage remover. Also, he depends for a living largely on rodent pests, and must aid in keeping down the numbers of prairie dogs, marmots, ground squirrels and the like to a very appreciable extent.

Science News-Letter, January 21, 1928

THE WORLD MOVES SWIFTLY

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